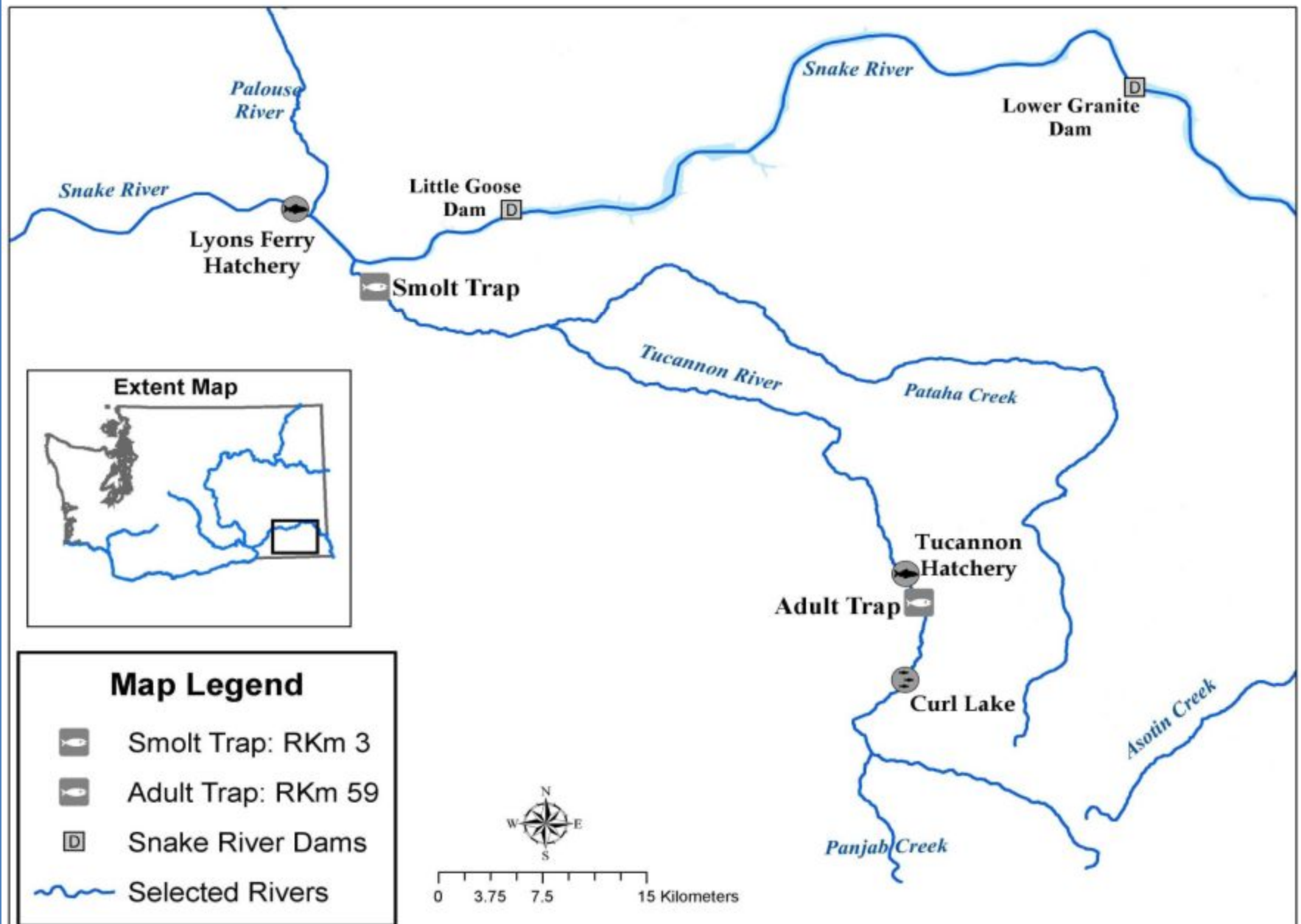


Tucannon River Spring Chinook – Age and Size at Maturity Through 25 Years of Supplementation

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WDFW – Snake River Lab



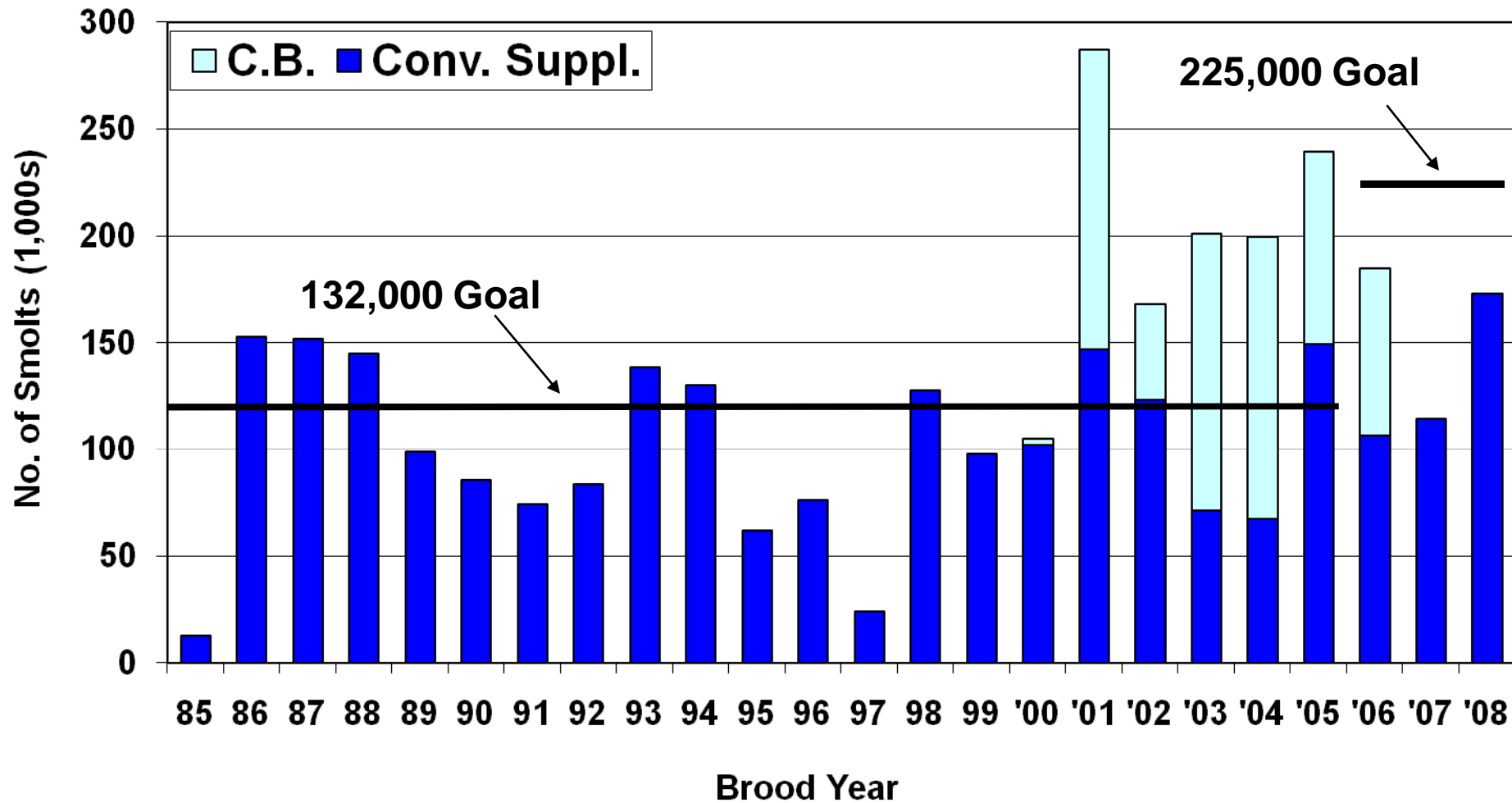
Map of Tucannon River Subbasin



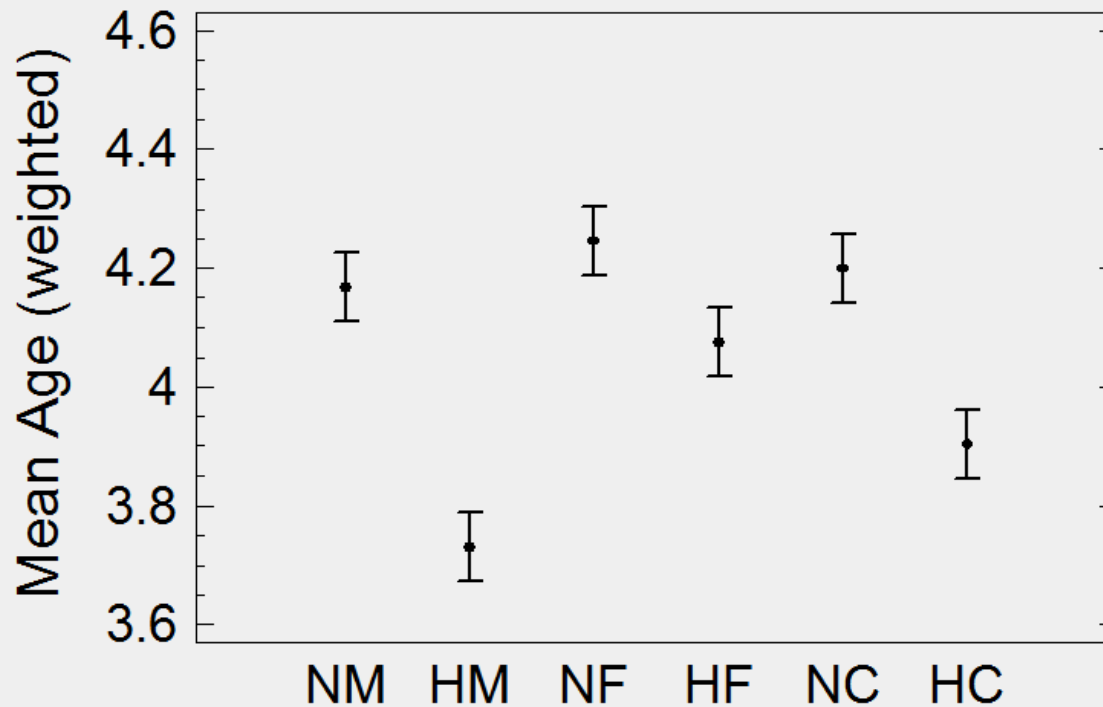
Brief Program History

- LSRCP Hatchery production began in 1985 using endemic broodstock.
- Since 1989, hatchery broodstock has consisted of both H & N origin fish (Strive for a minimum 50% N origin).
- Integrated program – There has always been intentional gene flow between the H & N components.
- The population was listed as Threatened under the ESA in 1992.
- Between 1994-1999 the average run declined to 196 fish (range 54-351) from a mean of 550 (1985-1993).
- A captive broodstock program was conducted for one generation (5 brood years – 1997-2001) to mitigate for this bottleneck.

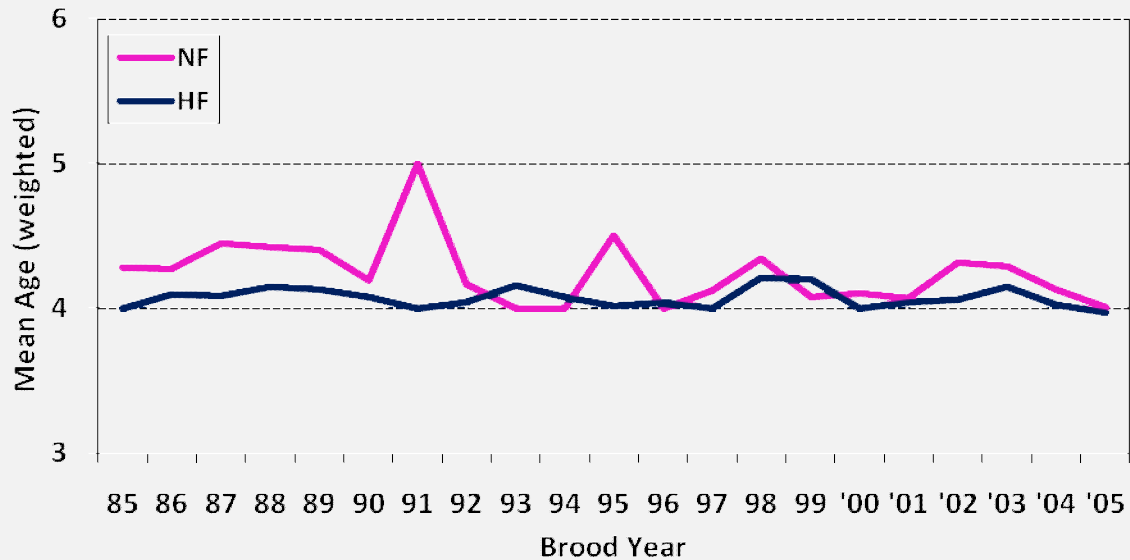
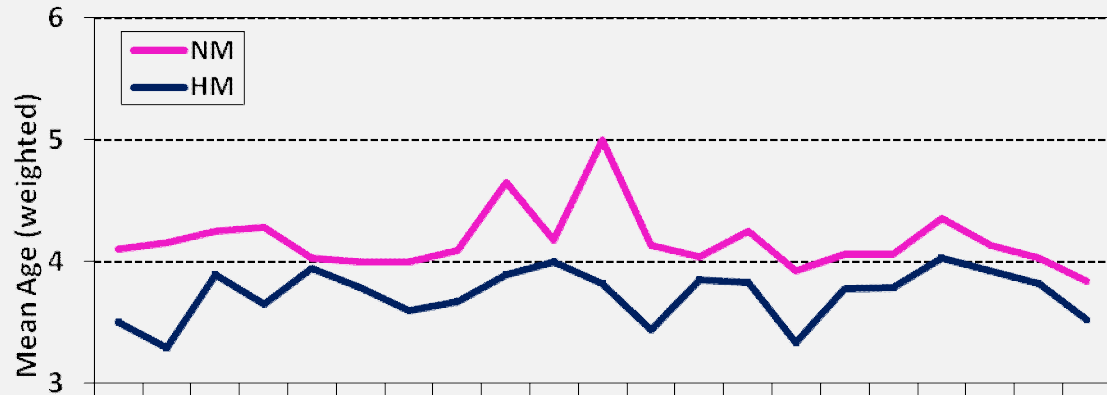
Number of Smolts Produced



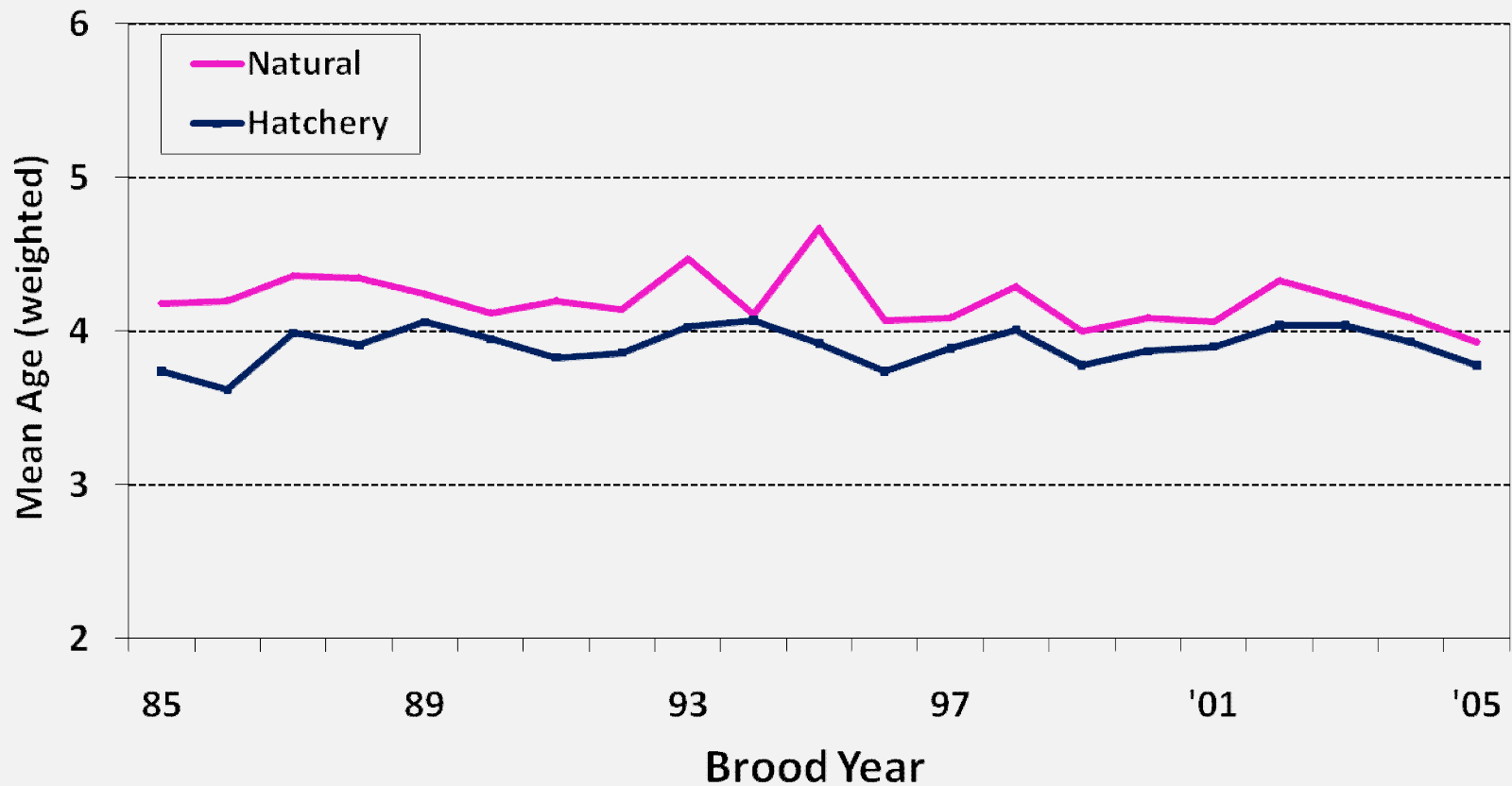
Statistically significant differences between natural and hatchery origin males, females and sexes combined for the 1985-2005 brood years.



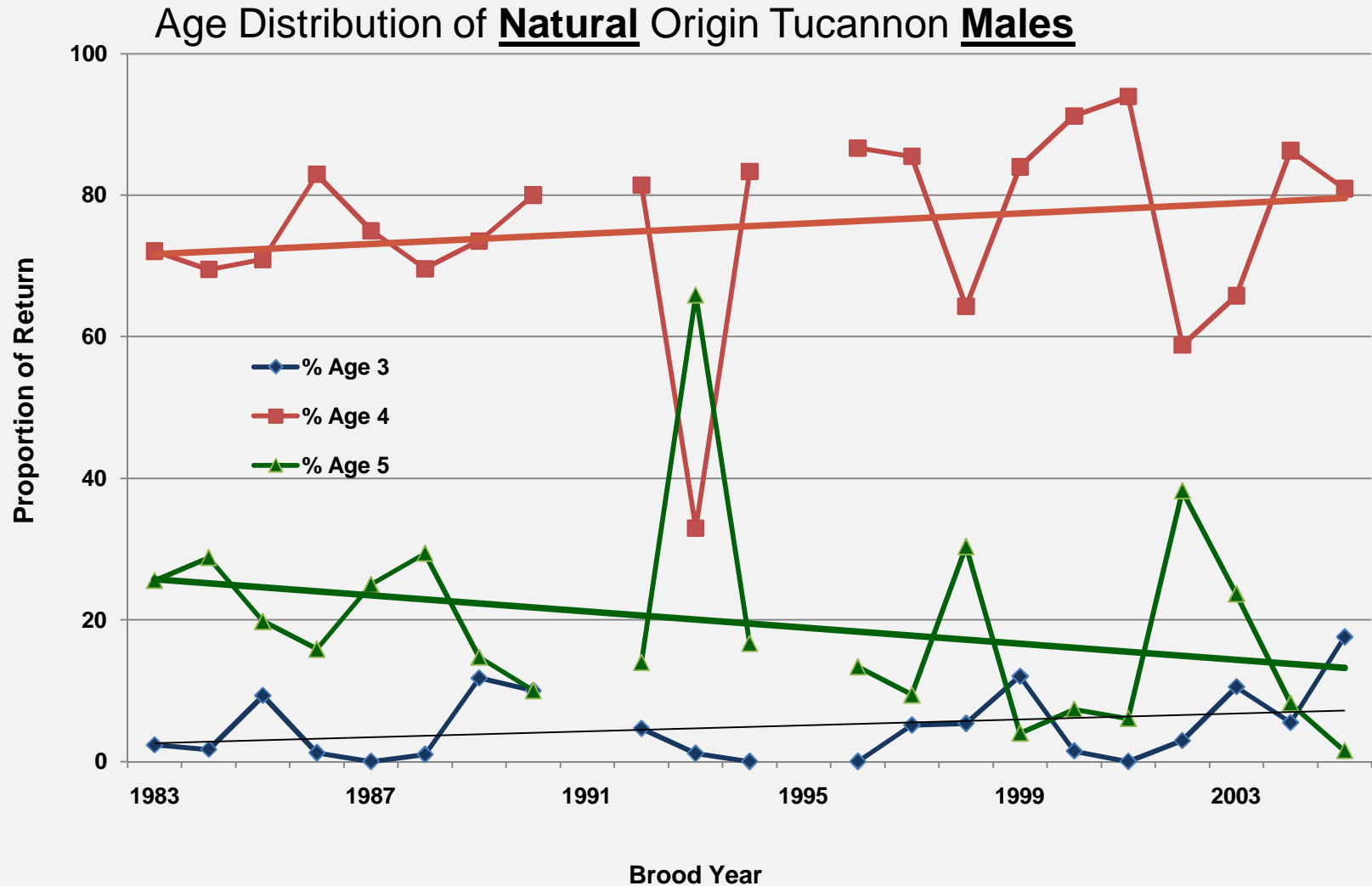
Q: Has Mean Age Changed over time?



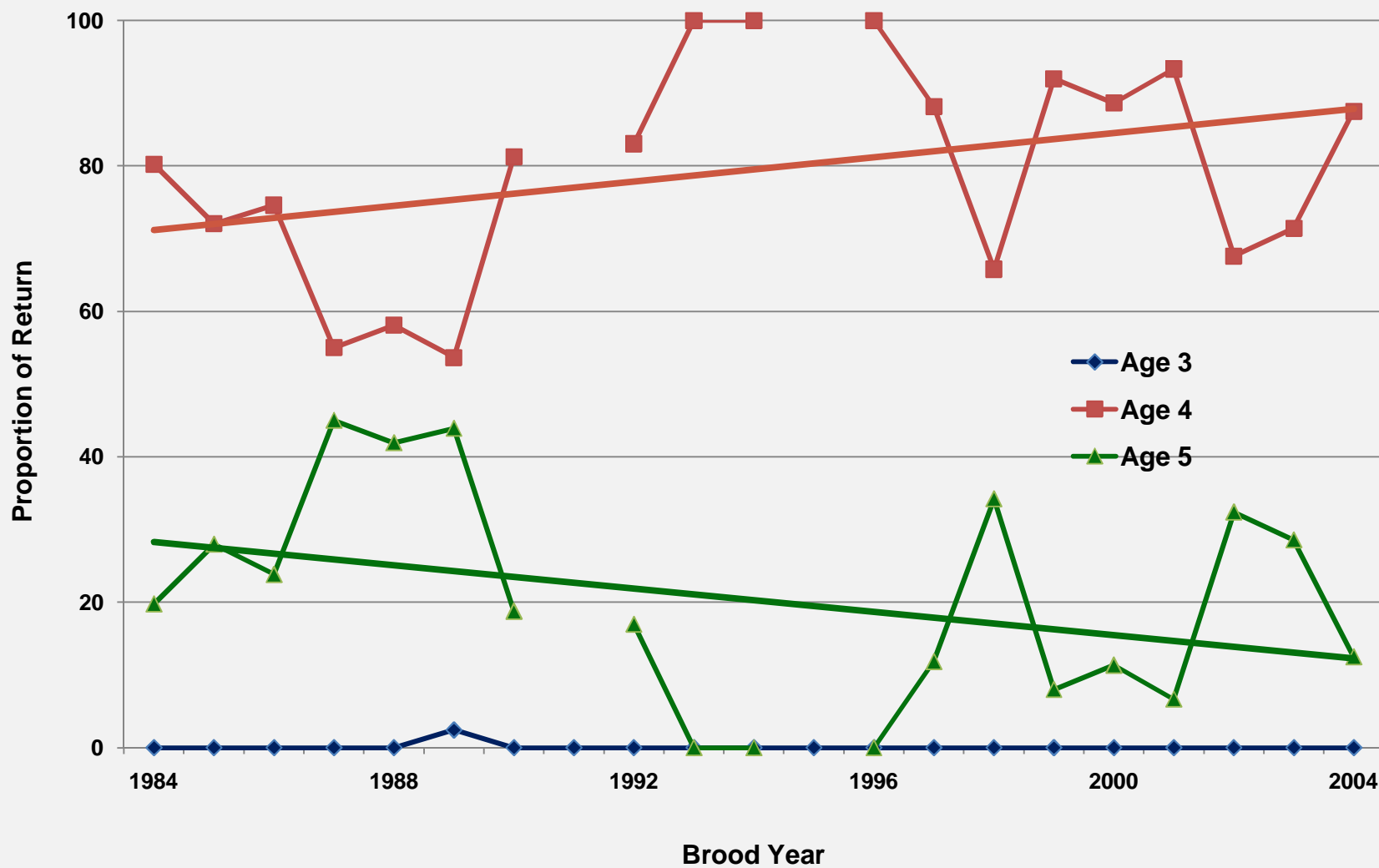
A: Neither population segment has shown a significant change in mean age over 20 BY's



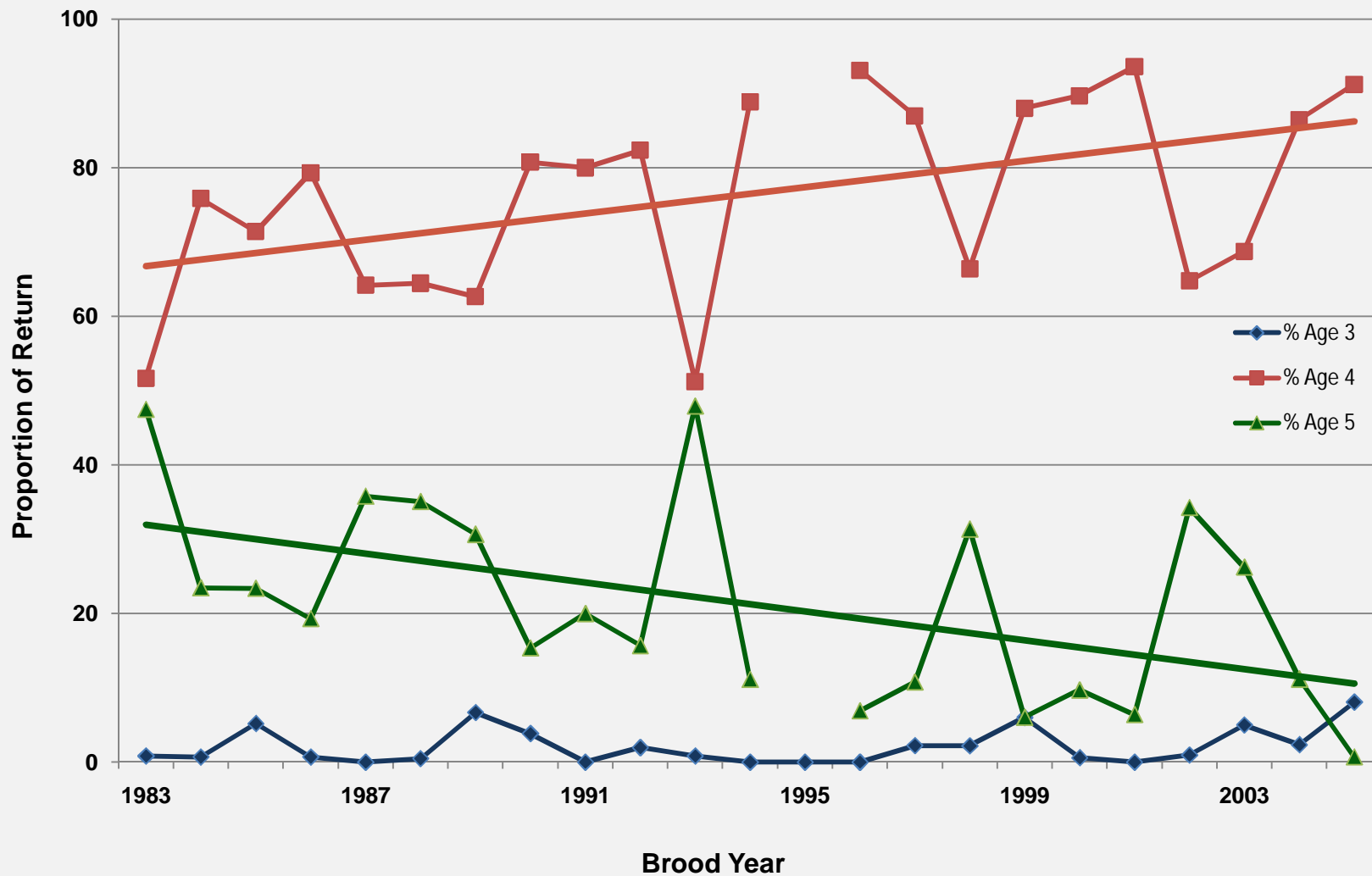
Q: Has age distribution changed over time?



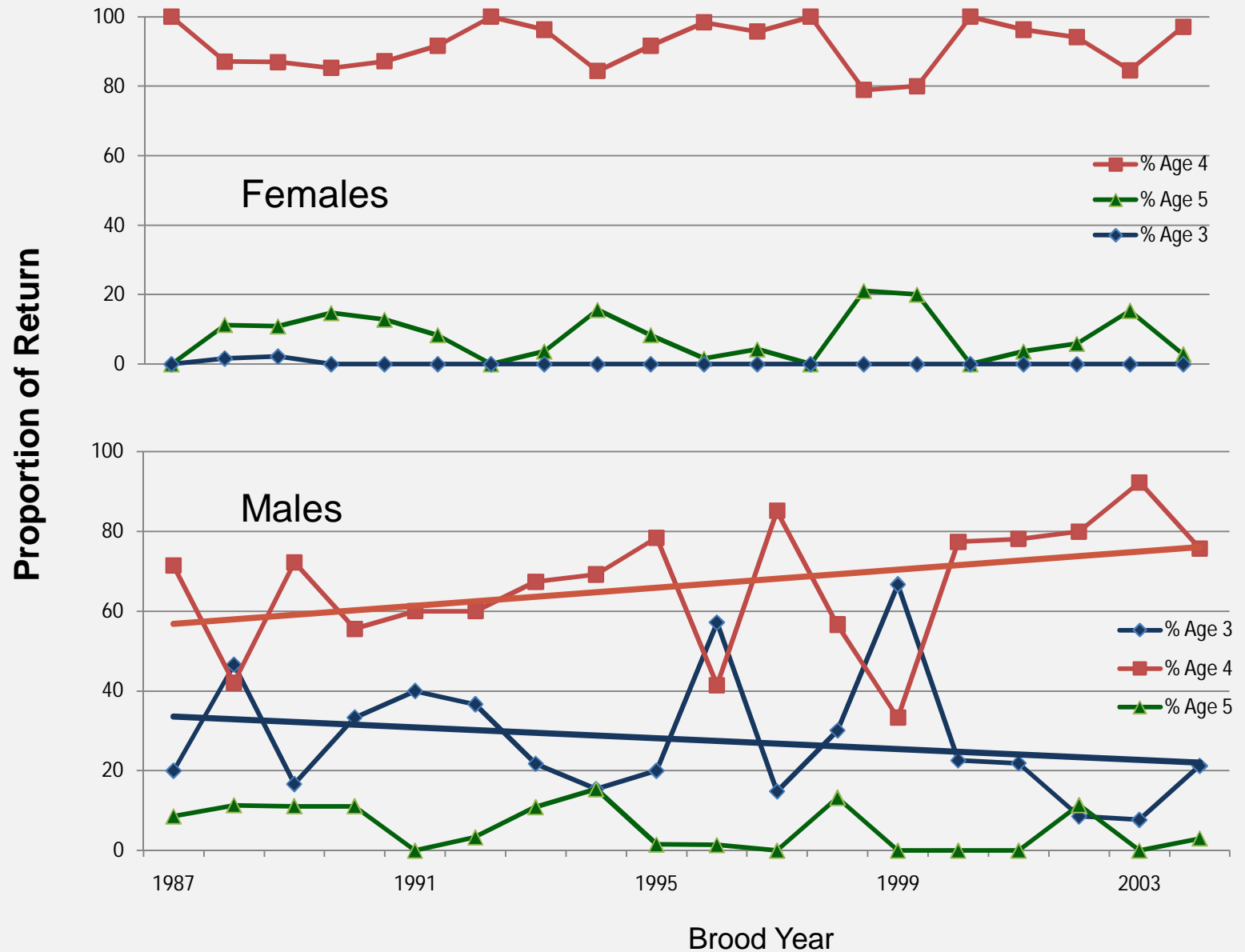
Age Distribution of Natural Origin Tucannon Females



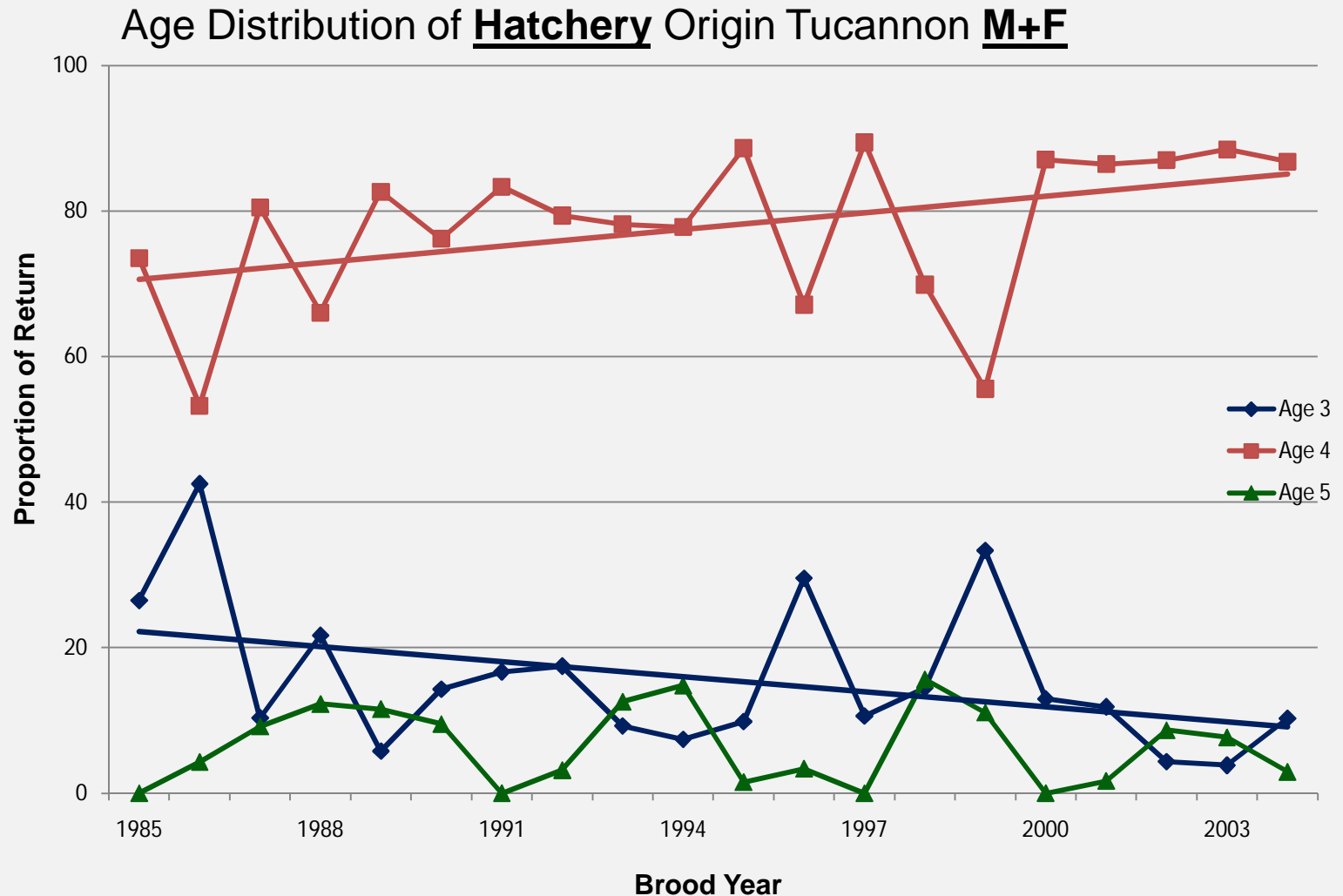
Age Distribution of Natural Origin Tucannon M+F



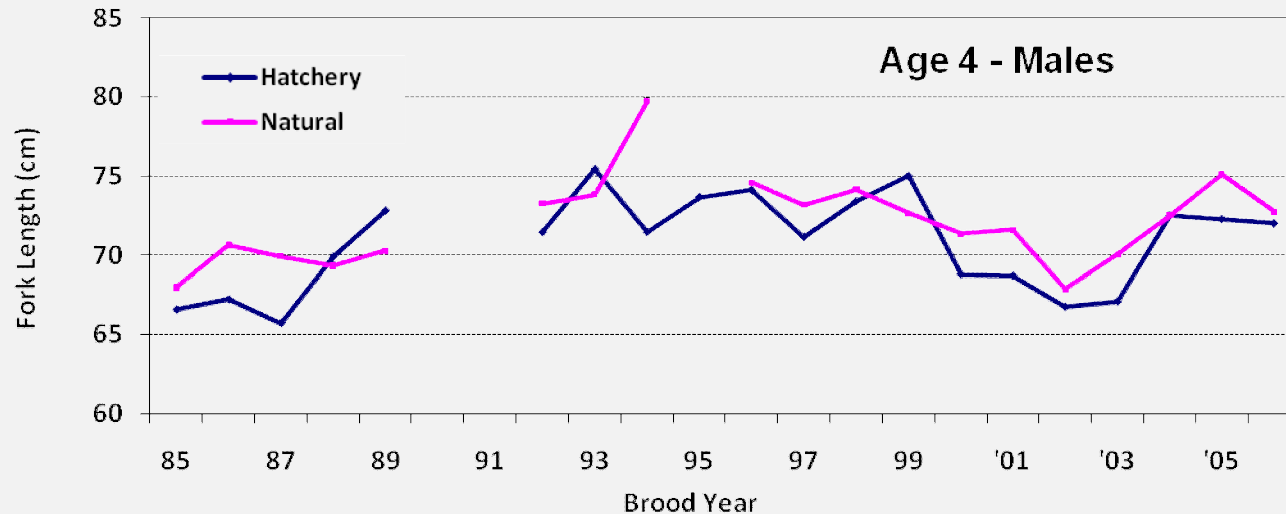
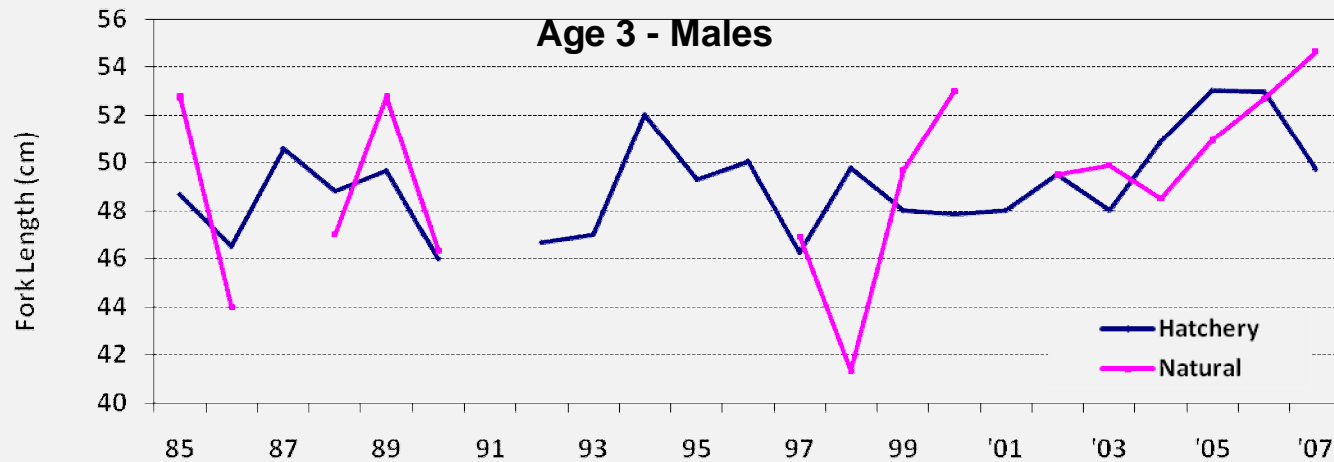
Age Distribution of Hatchery Origin Tucannon Fish



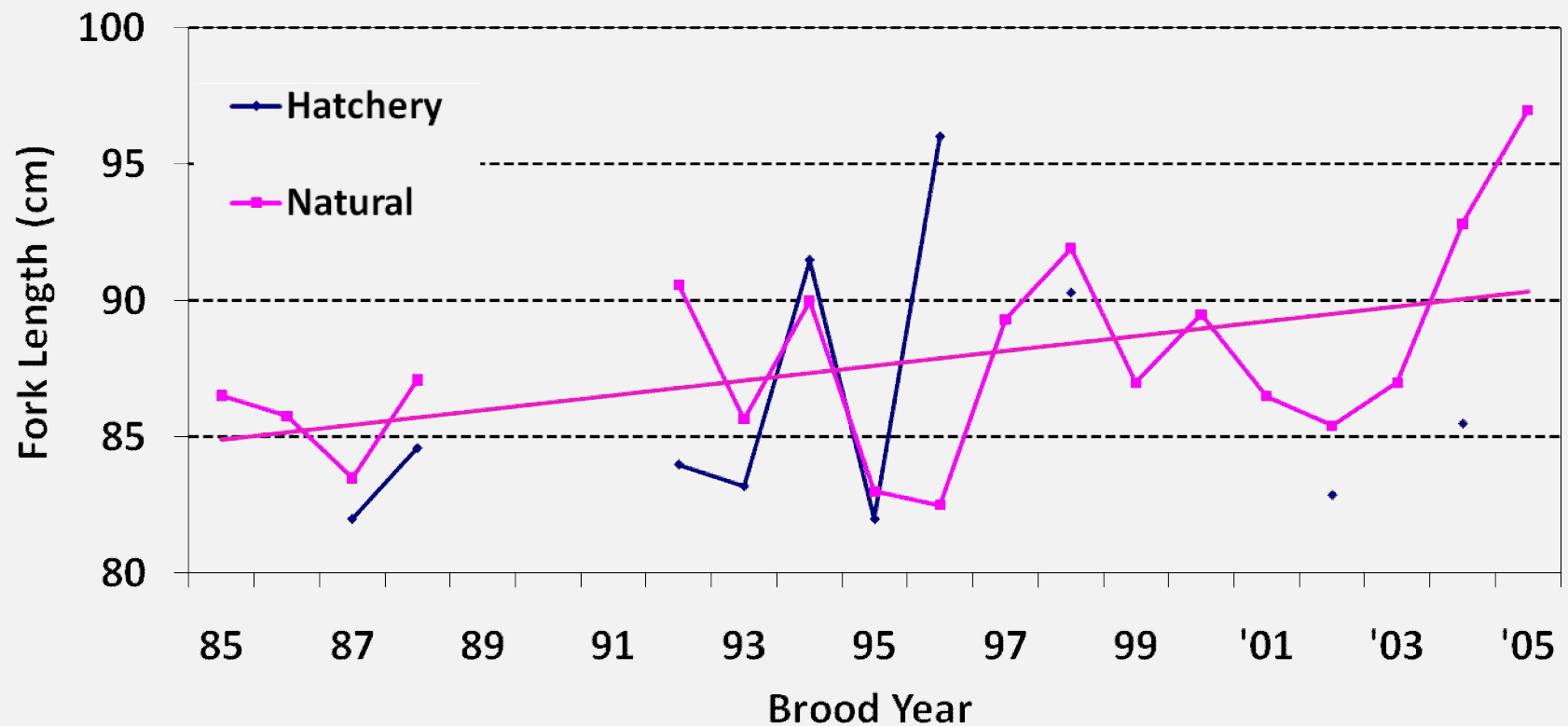
A: There is evidence of changing age distribution for both N + H populations



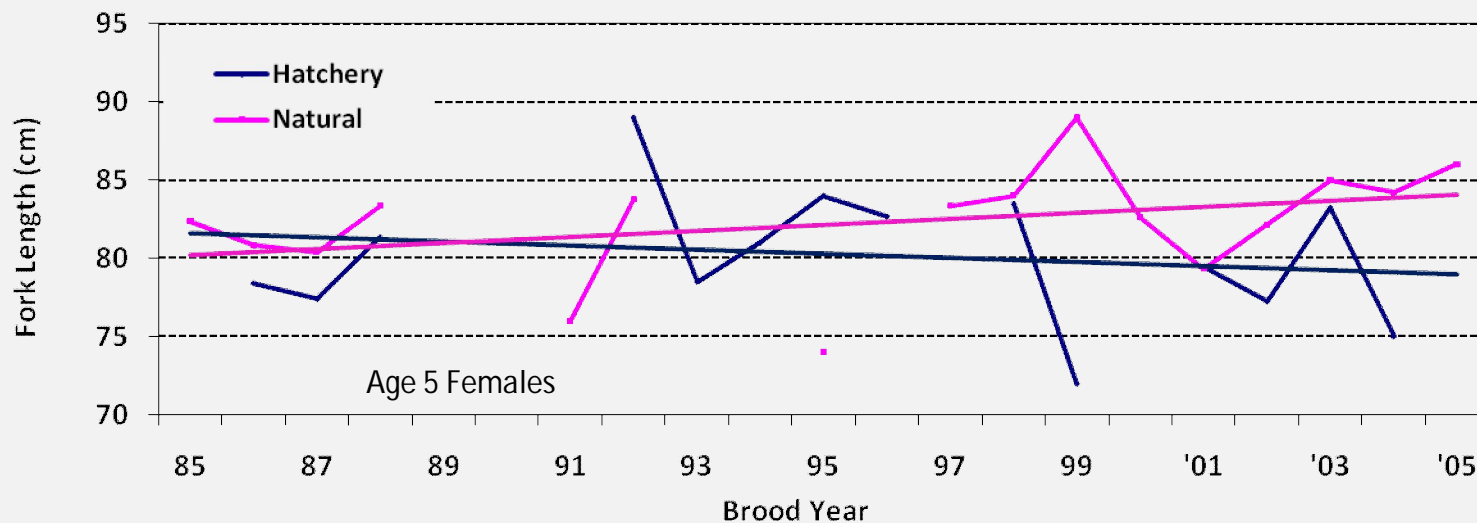
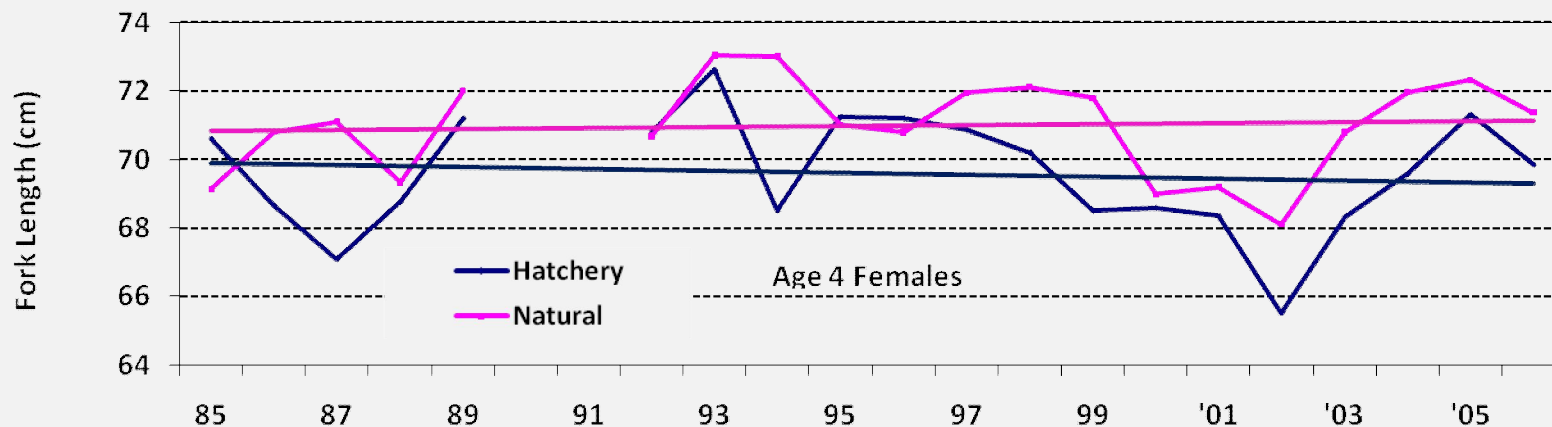
Q: Size at Age – What are the trends?



Interestingly – Age 5 Natural males are slightly larger now than
20 Brood yrs ago.

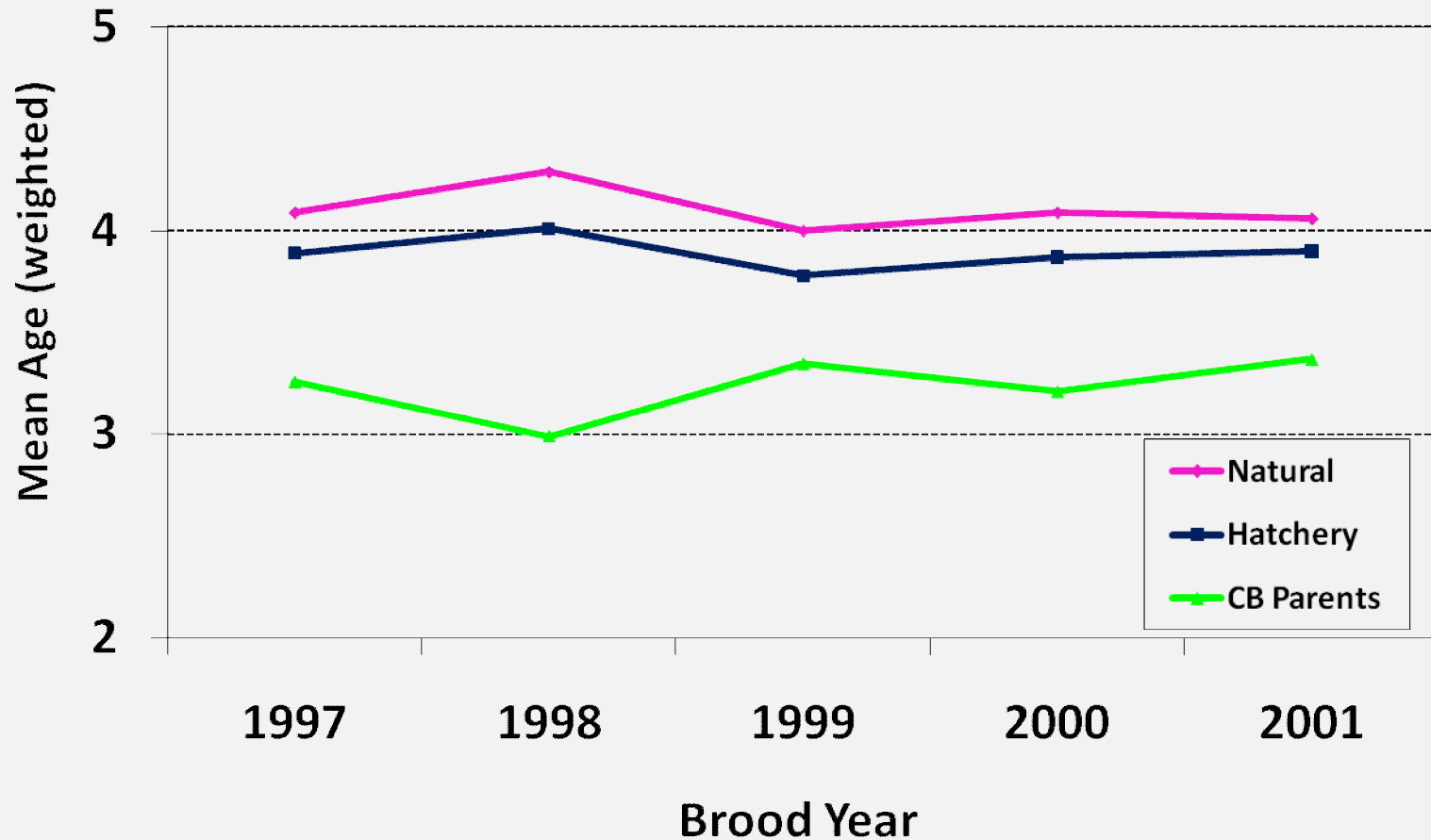


A: No strong trend in size at age for the Tucannon Population.



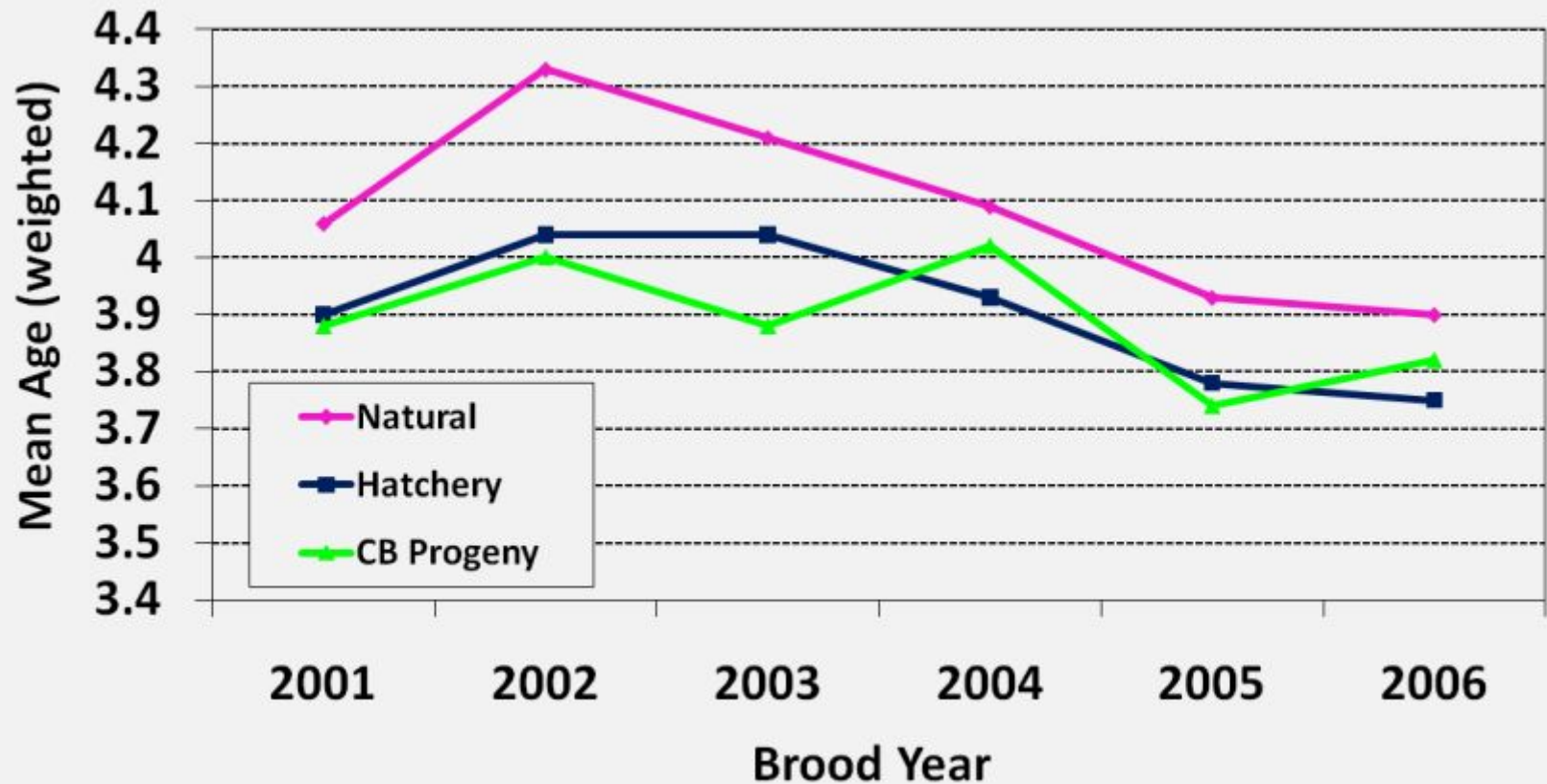
Q: Does extreme hatchery environment affect age at maturity?

A: Captive Brood matured significantly younger.



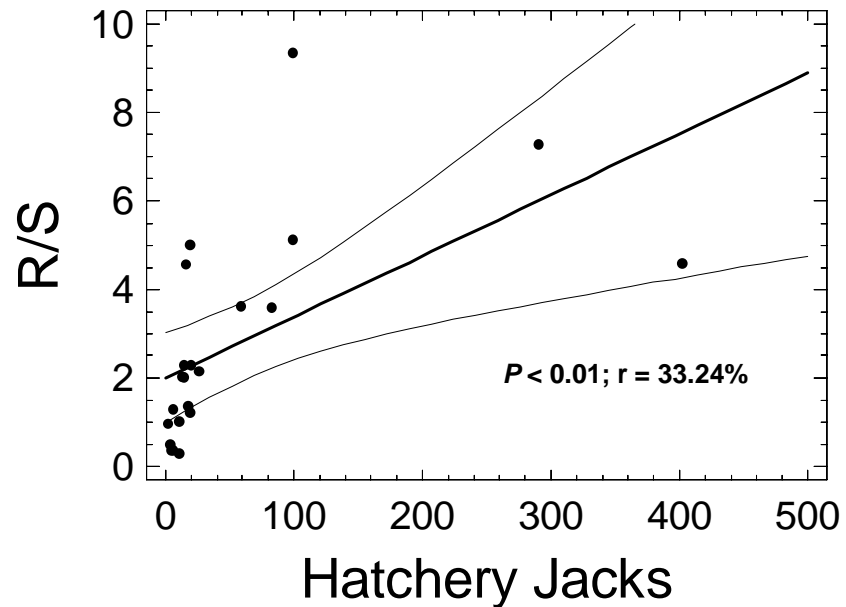
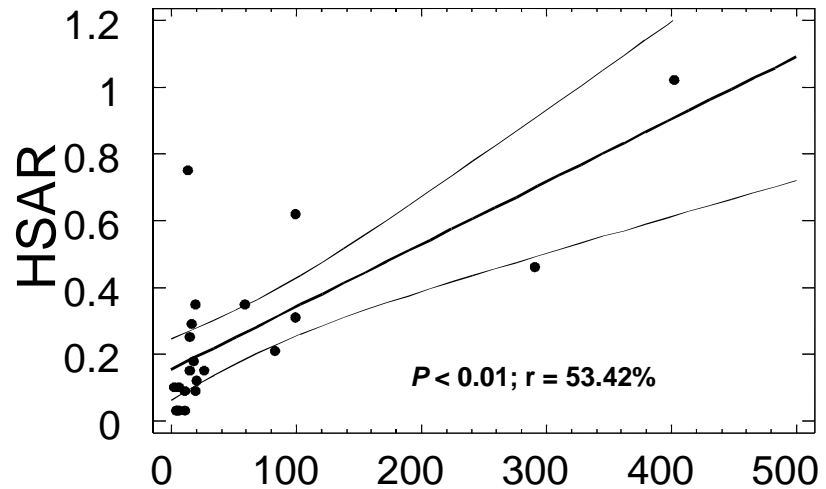
Q: Does extreme hatchery effect persist to subsequent generations?

A: Resumed age structure of hatchery cohort.

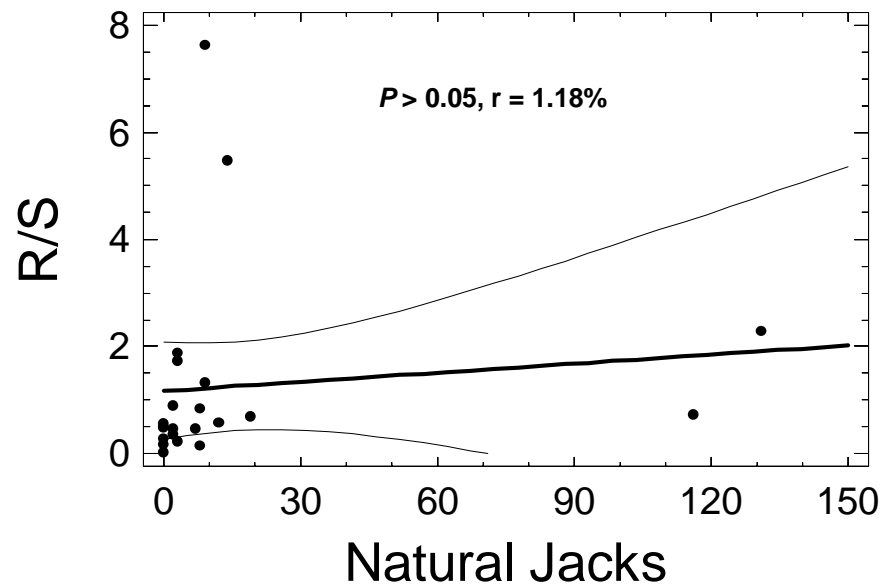
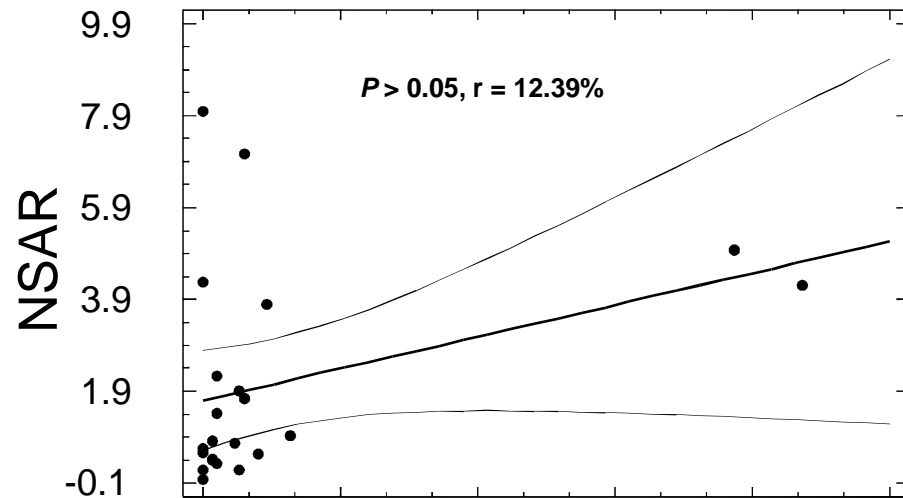



We examined if the number of jacks affected population performance metrics.

Not surprisingly, there were significant relationships between jack abundance and survival (SAR) and cohort recruitment for the hatchery population.



**There were not
similar significant
relationships for
the natural
population.**



A photograph of a shallow stream with a rocky bed. On the right side, a black trap is partially submerged in the water. The left bank is covered with tall, dense grass. The water is clear, showing the stones underneath.

There are other age groups in the spawning population that aren't observed at the adult trap...









Natural Origin (common) – \leq Age 1

Hatchery Origin (rare) – $>$ Age 1+

Summary

- Hatchery age and size structure are different from Natural and the change occurred quickly.
- There appears to be a shift in age structure toward Age 4 Natural fish that may be a result of hatchery effect(s).
- Mean age may not be reliable metric in tracking subtle population changes.
- Size at age doesn't seem to be changing – except possibly for increasing size of older females
- The immediate effects of CB on age and size don't appear to continue in F1 generation.

Summary

- Precocious parr are present but don't know their historical abundance or relevance to productivity.
- Other factors may have affected age at maturity or age distribution within the population (e.g. –severe population bottleneck in 1990's)

Questions?

